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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/619,531	07/15/2003	Doni S. Dattani	03-0444 1496.00308	7492
24319	7590	09/12/2007	EXAMINER	
LSI CORPORATION			HUBER, JEREMIAH C	
1621 BARBER LANE				
MS: D-106			ART UNIT	PAPER NUMBER
MILPITAS, CA 95035			2621	
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			09/12/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.		Applicant(s)	
	10/619,531		DATTANI ET AL.	
	Examiner		Art Unit	
	Jeremiah C. Huber		2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 June 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application..
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

1. Claims 1-20 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The claims have been amended to recite determining a unique intra prediction DC predictor. The examiner can find no written description determining a unique intra prediction DC predictor. In support of the amendment the applicant pointed out the following portions of the specification: page 12 lines 15-21; page 21 lines 4-9; page 26 lines 9-19 and page 30 lines 15-18. The first section discloses determining a prediction block for 4x4 or 16x16 samples and further that one of nine available modes can be used for each chroma block. The second section discloses that a PREDICTORS signal can be implemented as on or more individual control signals, or a multibit control signal. The third section further discloses determining the availability of reconstructed samples available for intra prediction. The fourth section discloses logically combining the signals S0-S3 to generate an intra prediction for each 4x4 chroma sub-block. None of the cited portions give support for the word unique, which would require that the particular

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predictor assigned to a sub-block is different from any other predictor that had been used previously, or will be used in the future. Based on the applicant's submitted arguments the examiner believes the applicant intends the amendment to indicate that an intra prediction DC predictor is determined for each 4x4 chroma sub-block, for which the specification does provide support. The claims will be further treated under this interpretation.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-2 and 5-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sun (20030202705) in view of "Working Draft Number 2 Revision 2" (hereafter WD2).

In regard to claim 1 Sun discloses an apparatus including:

a first processing circuit configured to generate a plurality of reconstructed samples in response to one or more macroblocks or an input signal (Sun Fig. 1 note dequantization (Q-1), inverse transform (T-1), adder (+) and frame buffer and par. 12 note reconstruction path).

a second processing circuit configured to determine an intra prediction predictor for a current macroblock in response to available reconstructed samples adjacent to the current macroblock (Sun Fig 1 note Intra MB section par. 12 intra mode).

It is noted that Sun does not disclose details related to chroma sub-blocks. However WD2 discloses a method of providing a intra prediction DC predictor for each 4x4 chroma sub-block (WD2 sections 4.4.2-4.4.5 pages 28 to 33 particularly page 33 section 4.4.4.1.3 note S0-S3). It is therefore considered obvious that one of ordinary skill in the art at the time of the invention would recognize the advantage of including chroma sub-block intra prediction as disclosed by WD2 in the apparatus of Sun in order to improve coding efficiency.

In regard to claim 2 refer to the statements made in the rejection of claim 1 above. Sun further discloses that the second processing circuit is implement in the decoding loop of an encoder (Sun Fig. 1 and par. 12note intra MB section is part of the reconstruction, or decoding loop.).

In regard to claim 5 refer to the statements made in the rejection of claim 1 above. WD2 further discloses that intra predicted sub-blocks are generated in response to predictors (WD2 page 33 section 4.4.4.1.3 note S0-S3)

In regard to claim 6 refer to the statements made in the rejection of claim 5 above. WD2 further discloses that the predictors are generated in response to reconstructed samples (WD2 page 33 section 4.4.4.1.3 note S0-S3 are the sums of 4 neighboring pixels).

In regard to claims 7-9 refer to the statements made in the rejection of claim 6 above. WD2 further discloses that reconstructed samples are formed from both a row adjacent to the top edge and a column adjacent to the left edge of the chroma block (WD2 page 33 section 4.4.4.1.3 note figure 8).

In regard to claim 10 refer to the statements made in the rejection of claim 9 above. WD2 further discloses that predictors are the sums of neighboring reconstructed samples (WD2 page 33 section 4.4.4.1.3 note S0-S3 are the sums of 4 neighboring pixels).

In regard to claim 11 refer to the statements made in the rejection of claim 9 above. WD2 further discloses indicating whether a particular sum of reconstructed samples is available (WD2 page 33 section 4.4.4.1.3 note cases where only two or none of the predictors are available).

In regard to claims 12-14 refer to the statements made in the rejection of claims 1 and 6-11 above. WD2 further discloses that there is only one mode for chroma prediction, which following the WD2 naming convention would be the 0th mode (WD2 page 33 section 4.4.4.1.3 note first sum of neighboring pixels is labeled S0 rather than S1).

In regard to claim 15 refer to the statements made in the rejection of claim 13 above. WD2 further discloses that predictors are selected independently for each sub-block (WD2 page 33 section 4.4.4.1.3 note when all predictors are present sub-blocks A, B, C, and D each receive different values).

In regard to claim 16 refer to the statements made in the rejection of claim 13 above. Sun further discloses inverse quantization and inverse transformation (Sun Fig. 1 note dequantization (Q-1), inverse transform (T-1), adder (+) and frame buffer and par. 12 note reconstruction path).

In regard to claims 17-19 refer to the statements made in the rejection of claim 13 above. WD2 further discloses using a predetermined value of 128, for the predictor when no sums are available (WD2 page 33 section 4.4.4.1.3 note $A=B=C=D=128$ when $S0-S3$ are outside the frame, also note 128 is the median value of the standard chroma range of 0-255).

In regard to claim 20 refer to the statements made in the rejection of claim 14 above. WD2 further discloses that the best predictor is a weighted average of one or more corresponding sums (WD2 page 33 section 4.4.4.1.3 note best predictor occurs when $S0-S3$ are present, also note A is the weighted average of $S0$ and $S2$ with each weight of 1).

3. Claims 3-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sun in view of WD2 as applied to claim 1 above, and further in view of Joch et al (20040101059).

Sun further discloses that the encoder conforms to the H.264 standard (Sun Fig. 1 and par. 12). It is noted that neither Sun nor WD2 explicitly disclose details of a decoder. However decoding is substantially the inverse operation of encoding, and at the time of the invention it would have been obvious to one of ordinary skill in the art to

arrange the components disclosed by Sun and WD2 in order to implement an H.264 compliant decoder to decode an H.264 compliant bitstream encoded by the encoder of Sun in view of WD2 as is shown by Joch (Joch Fig. 4 and pars. 62-73).

Response to Arguments

4. Applicant's arguments filed 6/14/2007 have been fully considered but they are not persuasive.

In response to the applicants arguments in regard to claim 1 the applicant asserts that Sun in view of WD2 fails to disclose determining a 'unique' intra predictor for each chroma sub-block of a macroblock, but rather determines predictors for 8x8 blocks which are applied to all subblocks. The examiner must disagree. WD2 clearly discloses individually determining predictors for each 4x4 chroma sub-block on page 33, particularly section 4.4.4.1.3 where varying predictors are applied to A-D depending on the availability of neighboring samples, and A-D are 4x4 blocks of the 8x8 chrominance block.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeremiah C. Huber whose telephone number is (571)272-5248. The examiner can normally be reached on Mon-Fri 8:00 a.m. - 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mehrdad Dastouri can be reached on (571)272-7418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jeremiah C Huber
Examiner
Art Unit 2621

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TC 2600